

CLAIMS:

1. A method of interleaving a support comprising providing a support, applying at least one curable material to a side of said support, applying
5 an interleaving material to said support so as not to be in contact with said curable material applied to said side of said support, and winding said support to produce a continuous gap between the side of said support opposite said side of said support coated with said curable material and said curable material.
- 10 2. The method of claim 1 wherein said support comprises a windable support.
3. The method of claim 1 wherein said support comprises a flexible support.
- 15 4. The method of claim 1 wherein said support comprises at least one member selected from the group consisting of polyethylene terephthalate (PET), polyethylene naphthalate (PEN), polyethersulfone (PES), polycarbonate (PC), polysulfone, a phenolic resin, an epoxy resin, polyester, polyimide, polyetherester, polyetheramide, cellulose acetate, aliphatic polyurethanes,
20 polyacrylonitrile, polytetrafluoroethylenes, polyvinylidene fluorides, poly(methyl (x-methacrylates), an aliphatic or cyclic polyolefin, polyarylate (PAR), polyetherimide (PEI), polyethersulphone (PES), polyimide (PI), Teflon poly(perfluoro-alboxy) fluoropolymer (PFA), poly(ether ether ketone) (PEEK),
25 poly(ether ketone) (PEK), poly(ethylene tetrafluoroethylene) fluoropolymer (PETFE), and poly(methyl methacrylate) acrylate/methacrylate copolymers (PMMA).
5. The method of claim 1 wherein said support comprises
30 polyethylene terephthalate (PET).

6. The method of claim 1 wherein said support comprises polyethylene naphthalate (PEN).
7. The method of claim 1 wherein said support comprises polyester.
8. The method of claim 1 wherein said support comprises polyimide.
9. The method of claim 1 wherein said support comprises cellulose acetate.
10. The method of claim 1 wherein said support comprises aliphatic polyolefin.
11. The method of claim 10 wherein said aliphatic polyolefin comprises high density polyethylene (HDPE), low density polyethylene (LDPE), polypropylene, and oriented polypropylene (OPP).
12. The method of claim 1 wherein said support is greater than 3 microns in thickness.
13. The method of claim 1 wherein said support is from 50 to 250 microns in thickness.
14. The method of claim 1 wherein said support further comprises a hard coating.
15. The method of claim 1 further comprising applying said support to a second support.

16. The method of claim 1 wherein said support has been previously wound onto a core.

17. The method of claim 1 wherein said curable material
5 comprises electrically modulated material.

18. The method of claim 17 wherein said electrically modulated material comprises a thermo-chromic material.
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19. The method of claim 17 wherein said electrically modulated material comprises light modulating material.

20. The method of claim 19 wherein said light modulating material
15 comprises liquid crystalline material.

21. The method of claim 20 wherein said liquid crystalline material comprises
chiral nematic liquid crystalline materials.
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22. The method of claim 1 wherein said curable material comprises a conductive material.

23. The method of claim 22 wherein said conductive material
25 comprises conductive ink.

24. The method of claim 23 wherein said conductive ink is silver based.

25. The method of claim 23 wherein said conductive ink
30 comprises microcapsules.

26. The method of claim 23 wherein said conductive ink comprises an arrangement of particles.

27. The method of claim 26 wherein said particles comprise
5 rotatable balls that can rotate to expose a different colored surface area, and which can migrate between a forward viewing position and/or a rear non-viewing position.

28. The method of claim 1 wherein said curable material
10 comprises color contrast materials.

29. The method of claim 1 wherein said curable material comprises dielectric materials.

30. The method of claim 1 wherein said curable material
15 comprises barrier layers.

31. The method of claim 1 wherein said at least one curable layer is from 10 to 70 microns in thickness.

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32. The method of claim 1 wherein said support and said at least one curable layer have a total thickness of from 60 to 300 microns.

33. The method of claim 1 wherein said curable material is cured
25 by the application of light.

34. The method of claim 33 wherein said light comprises ultraviolet light.

35. The method of claim 33 wherein said light comprises visible
30 light.

36. The method of claim 33 wherein said light comprises infrared light.

37. The method of claim 1 wherein said curable material is cured
5 by the application of heat.

38. The method of claim 1 wherein said curable material is cured
by the application of air flow.

39. The method of claim 1 wherein said curable material is cured
10 by chemical reaction.

40. The method of claim 39 wherein said chemical reaction
comprises cross-linking polymerizations.

41. The method of claim 1 wherein said interleaving material
15 comprises a continuous roll.

42. The method of claim 1 wherein said interleaving material
20 comprises a strip applied along at least one edge of said support.

43. The method of claim 1 wherein said interleaving material
comprises a strip applied along at least two edges of said support.

44. The method of claim 1 wherein said interleaving material
25 comprises of a flexible material.

45. The method of claim 44 wherein said flexible material
comprises open celled foam.

46. The method of claim 44 wherein said flexible material
30 comprises Velcro® fastener material.

47. The method of claim 44 wherein said flexible material comprises mesh.

48. The method of claim 1 wherein said interleaving material has a
5 thickness of from 0.762 to 2.286 mm.

49. The method of claim 1 wherein said interleaving material has a thickness of from 1.016 to 2.032 mm.

10 50. The method of claim 1 wherein said interleaving material further comprises adhesive backing.

51. The method of claim 1 wherein said gap is greater than 75
15 microns.

52. The method of claim 1 wherein said gap measures from 0.127
to 3.175 mm.

53. The method of claim 1 wherein said winding is continuous.

20 54. The method of claim 1 wherein said winding has a winding tension of from 17.5 to 1752 Newtons per linear meter.

55. The method of claim 1 wherein said winding has a speed of
25 from 0.03 to 152 meters per minute.

56. The method of claim 1 further comprising curing said curable coating

30 57. The method of claim 56 further comprising patterning said cured coating.

58. The method of claim 1 wherein said gap provides air flow therethrough from 0 to 269 mpm in velocity.

5 59. A roll of liquid crystalline material comprising a support having thereon a curable material and an interleaving material, wherein said interleaving material is not in contact with said curable material on said support, wherein said support is wound to form a roll.

10 60. The roll of liquid crystalline material of claim 59 wherein said support comprises a windable support.

61. The roll of liquid crystalline material of claim 59 wherein said support comprises a flexible support.

15 62. The roll of liquid crystalline material of claim 59 wherein said support comprises at least one member selected from the group consisting of polyethylene terephthalate (PET), polyethylene naphthalate (PEN), polyethersulfone (PES), polycarbonate (PC), polysulfone, a phenolic resin, an epoxy resin, polyester, polyimide, polyetherester, polyetheramide, cellulose
20 acetate, aliphatic polyurethanes, polyacrylonitrile, polytetrafluoroethylenes, polyvinylidene fluorides, poly(methyl (x-methacrylates), an aliphatic or cyclic polyolefin, polyarylate (PAR), polyetherimide (PEI), polyethersulphone (PES), polyimide (PI), Teflon poly(perfluoro-alboxy) fluoropolymer (PFA), poly(ether ether ketone) (PEEK), poly(ether ketone) (PEK), poly(ethylene
25 tetrafluoroethylene) fluoropolymer (PETFE), and poly(methyl methacrylate) acrylate/methacrylate copolymers (PMMA).

30 63. The roll of liquid crystalline material of claim 59 wherein said support comprises polyethylene terephthalate (PET).

64. The roll of liquid crystalline material of claim 59 wherein said support comprises polyethylene naphthalate (PEN).

65. The roll of liquid crystalline material of claim 59 wherein said support comprises polyester.

5 66. The roll of liquid crystalline material of claim 59 wherein said support comprises polyimide.

67. The roll of liquid crystalline material of claim 59 wherein said support comprises cellulose acetate.

10 68. The roll of liquid crystalline material of claim 59 wherein said support comprises aliphatic polyolefin.

69. The roll of liquid crystalline material of claim 68 wherein said aliphatic polyolefin comprises high density polyethylene (HDPE), low density
15 polyethylene (LDPE), polypropylene, and oriented polypropylene (OPP).

70. The roll of liquid crystalline material of claim 59 wherein said support is greater than 3 microns in thickness.

20 71. The roll of liquid crystalline material of claim 59 wherein said support further comprises a hard coating.

72. The roll of liquid crystalline material of claim 59 wherein said support has been previously wound onto a core.

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73. The roll of liquid crystalline material of claim 59 wherein said curable material comprises electrically modulated material.

74. The roll of liquid crystalline material of claim 73 wherein said
30 electrically modulated material comprises a thermo-chromic material.

75. The roll of liquid crystalline material of claim 73 wherein said electrically modulated material comprises light modulating material.

5 76. The roll of liquid crystalline material of claim 75 wherein said light modulating material comprises liquid crystalline material.

77. The roll of liquid crystalline material of claim 76 wherein said liquid crystalline material comprises chiral nematic liquid crystalline materials.

10 78. The roll of liquid crystalline material of claim 59 method of claim 1 wherein said curable material comprises a conductive material.

79. The roll of liquid crystalline material of claim 78 wherein said conductive material comprises conductive ink.

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80. The roll of liquid crystalline material of claim 79 wherein said conductive ink is silver based.

20 81. The roll of liquid crystalline material of claim 79 wherein said conductive ink comprises microcapsules.

82. The roll of liquid crystalline material of claim 79 wherein said conductive ink comprises an arrangement of particles.

25 83. The roll of liquid crystalline material of claim 83 wherein said particles comprise rotatable balls that can rotate to expose a different colored surface area, and which can migrate between a forward viewing position and/or a rear non-viewing position.

30 84. The roll of liquid crystalline material of claim 59 wherein said curable material comprises color contrast materials.

85. The roll of liquid crystalline material of claim 59 wherein said curable material comprises dielectric materials.

5 86. The roll of liquid crystalline material of claim 59 wherein said curable material comprises barrier layers.

87. The roll of liquid crystalline material of claim 59 wherein said curable material is cured by the application of light.

10 88. The roll of liquid crystalline material of claim 87 wherein said light comprises ultraviolet light.

89. The roll of liquid crystalline material of claim 87 wherein said light comprises visible light.

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90. The roll of liquid crystalline material of claim 87 wherein said light comprises infrared light.

20 91. The roll of liquid crystalline material of claim 59 wherein said curable material is cured by the application of heat.

92. The roll of liquid crystalline material of claim 59 wherein said curable material is cured by the application of air flow.

25 93. The roll of liquid crystalline material of claim 59 wherein said curable material is cured by chemical reaction.

94. The roll of liquid crystalline material of claim 93 wherein said chemical reaction comprises cross-linking polymerizations.

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95. The roll of liquid crystalline material of claim 59 wherein said interleaving material comprises a strip applied along at least one edge of said support.

5 96. The roll of liquid crystalline material of claim 59 wherein said interleaving material comprises of a flexible material.

97. The roll of liquid crystalline material of claim 96 wherein said flexible material comprises open celled foam.

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98. The roll of liquid crystalline material of claim 96 wherein said flexible material comprises Velcro® fastener material.

99. The roll of liquid crystalline material of claim 96 wherein said
15 flexible material comprises mesh.

100. The roll of liquid crystalline material of claim 59 wherein said interleaving material has a thickness of from 0.762 to 2.286 mm.

20 101. The roll of liquid crystalline material of claim 59 wherein said interleaving material has a thickness of from 1.016 to 2.032 mm.

102. The roll of liquid crystalline material of claim 59 wherein said interleaving material further comprises adhesive backing.

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103. The roll of liquid crystalline material of claim 59 wherein said gap is greater than 75 microns.

104. The roll of liquid crystalline material of claim 59 wherein
30 said gap measures from 0.127 to 3.175 mm.

105. The roll of liquid crystalline material of claim 59 wherein said gap provides air flow therethrough from 0 to 269 mpm in velocity.